

PATENT
8733.440.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Sung Woong MOON et al.

Art Unit: **Unknown**

Application No.: **NEW**

Examiner: **Unknown**

File Date: **May 24, 2001**

For: **Tape Carrier Package with Separated Bonding parts,
Liquid Crystal Display Employing the Same and Method of
Compensating Misalignment Thereof**

PRELIMINARY AMENDMENT

Commissioner of Patents
Washington, D.C. 20032

May 24, 2001

Sir:

Preliminary to the examination of the above-identified application, the following amendments and remarks are respectfully requested.

IN THE SPECIFICATION:

Please insert the following **new** paragraph in the area above the Title on page 1 of the specification.

--This application claims the benefit of Korean Patent Application No. 2000-28072, filed on May 24, 2000, which is hereby incorporated by reference for all purposes as if fully set forth herein.--

The following paragraphs are replacement paragraphs for the specification. A marked-up version of the replacement paragraphs is attached to the last page of this Preliminary Amendment.

Paragraph Two - Page Three

In Fig. 1 and Fig. 2, the front side of the upper glass substrate 1 of the LCD panel 2 is attached with a polarizer while the rear side thereof is provided with a color filter, a black matrix and an alignment film. The front side of the lower glass substrate 3 of the LCD panel 2 is provided with a TFT, a gate line, a gate pad, a data line, a data pad, a pixel electrode and an alignment film while the rear side thereof is attached with a polarizer. A backlight 4 is installed under the lower glass substrate 3 of the LCD panel 2 to irradiate light onto the LCD panel 2.

Paragraph Four - Page 3 and continuing onto Page 4

When the D-IC 8 mounted in the TCP 10 or 12 is a data D-IC, this data D-IC plays a role to supply a video data to the data lines of the LCD panel 2 in response to a dot clock under control of a controller (not shown). On the other hand, when the D-IC 8 mounted in the TCP 10 or 12 is a gate D-IC, this gate D-IC plays a role to sequentially apply a scanning pulse to the gate lines under control of the controller.

Paragraph One (first full) - Page 4

The conventional TAB system has a problem in that, when the TCP 10 or 12 is bonded onto the LCD panel 2, the bonding part of the TCP 10 or 12, that is, the output pad 16 is expanded due to heat. More specifically, the TCP 10 or 12 is bonded to the edge of the lower glass substrate 3 with having the ACF therebetween under high-temperature and high-pressure circumstance. The output pad 16 of the TCP 10 or 12 is expanded due to heat according to such high-temperature and high-pressure circumstance. Accordingly, since a space between pads 16a formed at the output pad 16 of the TCP 10 or 12 becomes different from a space between pads 3a formed on the lower glass substrate 3, a misalignment occurs

when the TCP 10 or 12 is bonded onto the lower glass substrate 3. As a result, an open circuit may occur between the adjacent pads 3a or 16a.

Paragraph One - Page 9

First, the ACF is coated onto the pad formed at the lower glass substrate 3 of the LCD panel 2 or onto the bonded surface of the first and second output pads 36a and 36b of the TCP. Heat is applied to the bonded portion of the lower glass substrate 3 onto which the TCP is bonded, to thereby bond the TCP onto the lower glass substrate 3. At this time, although the first and second output pads 36a and 36b are thermally expanded, the thermal expansion amount is reduced by such an amount that the length SL of each pad is reduced as can be seen from the above formula (1). As a result, a misalignment is not generated between the pads 3a and 30a on the TCP and the lower glass substrate 3, so that the pads 3a and 30a on the TCP and the lower glass substrate 3 are bonded in such a manner to accurately correspond to a relationship of one to one, as shown in Fig. 8.

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REMARKS

Favorable consideration of the application, as amended, is respectfully requested.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911 (8733.440.00). Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Attachment: Marked-up version of specification showing changes.

MARKED-UP VERSION SHOWING
SPECIFICATION CHANGES

Paragraph Two - Page Three

In Fig. 1 and Fig. 2, the front side of the upper glass substrate 1 of the LCD panel 2 is attached with a polarizer while the rear side thereof is provided with a color filter, a black matrix and an alignment film. The front side of the lower glass substrate 3 of the LCD panel 2 is provided with a TFT, a gate line, a gate pad, a data line, a data pad, a pixel electrode and an alignment film while the rear side thereof is attached with a polarizer. A backlight 4 is installed under the lower glass substrate 3 of the LCD panel 2 to irradiate [a] light onto the LCD panel 2.

Paragraph Four - Page 3 and continuing onto Page 4

When the D-IC 8 mounted in the TCP 10 or 12 is a [gate] data D-IC, this [gate] data D-IC plays a role to supply a video data to the data lines of the LCD panel 2 in response to a dot clock under control of a controller (not shown). On the other hand, when the D-IC 8 mounted in the TCP 10 or 12 is a [data] gate D-IC, this [data] gate D-IC plays a role to sequentially apply a scanning pulse to the gate lines under control of the controller.

Paragraph One (first full) - Page 4

The conventional TAB system has a problem in that, when the TCP 10 or 12 is bonded onto the LCD panel 2, the bonding part of the TCP 10 or 12, that is, the output pad 16 is expanded due to heat. More specifically, the TCP 10 or 12 is bonded to the edge of the lower glass substrate 3 with having the ACF therebetween under high-temperature and high-pressure circumstance. The output pad 16 of the TCP 10 or 12 is expanded due to [a] heat according to such high-temperature and high-pressure circumstance. Accordingly, since a

space between pads 16a formed at the output pad 16 of the TCP 10 or 12 becomes different from a space between pads 3a formed on the lower glass substrate 3, a misalignment occurs when the TCP 10 or 12 is bonded onto the lower glass substrate 3. As a result, an [electrical short] open circuit may [be generated] occur between the adjacent pads 3a or 16a.

Paragraph One - Page 9

First, the ACF is coated onto the pad formed at the lower glass substrate 3 of the LCD panel 2 or onto the bonded surface of the first and second output pads 36a and 36b of the TCP. [A heat] Heat is applied to the bonded portion of the lower glass substrate 3 onto which the TCP is bonded, to thereby bond the TCP onto the lower glass substrate 3. At this time, although the first and second output pads 36a and 36b are thermally expanded, the thermal expansion amount is reduced by such an amount that the length SL of each pad is reduced as can be seen from the above formula (1). As a result, a misalignment is not generated between the pads 3a and [30a] 30a on the TCP and the lower glass substrate 3, so that the pads 3a and 30a on the TCP and the lower glass substrate 3 are bonded in such a manner to accurately correspond to a relationship of one to one, as shown in Fig. 8.